

Modern Concepts of Cardiovascular Disease

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CHRONIC PERICARDITIS

Definition. Chronic pericarditis consists of fibrosis, thickening, and adhesions of the pericardium resulting from acute pericarditis. There may be acute and chronic pericarditis together in the same case as sometimes happens in recurrent rheumatic infections, but generally in chronic pericarditis the process is no longer active. Pericardial adhesions are often considered synonymous with chronic pericarditis but this is not strictly correct, for adhesions begin to form in the acute and subacute stages of inflammation and not infrequently there are areas of fibrosis of the pericardium, for example, the familiar milk spots or soldiers' patches, without adhesions.

Incidence. Chronic pericarditis is very common if we include all lesions large and small, and even if we limit ourselves to appreciable areas of adhesive pericarditis, that is to more than a few strands of adhesions, the condition is frequently found, though almost always simply as a postmortem discovery of academic interest. Cabot found 114 cases of adhesive pericarditis or 2.8 per cent among 4000 autopsies at the Massachusetts General Hospital.

Importance. In spite of the frequency of chronic pericarditis it is a relatively unimportant condition, because in the great majority of cases the thickening and adhesions cause little or no strain on the heart and do not obstruct the circulation. Rare instances exist, however, in which pericardial adhesions are a sufficient handicap to cause symptoms and signs by themselves or to aggravate those produced by valvular disease or other trouble. It behooves us to attempt to recognize such cases and to afford them relief if possible by corrective measures. Such recognition and help were at one time refinements but now they should be regarded as a part of our everyday work in diagnosis and treatment.

Etiology. Chronic pericarditis is found twice as commonly in males as in females; the percentage of males in Cabot's series was 72. All ages are affected from early youth to extreme old age. All races are subject, but the condition is more common in temperate than in tropical climates.

The cause is frequently unknown. In New England the rheumatic infection is apparently responsible for about one-half of the cases. Tuberculosis

is occasionally the cause. In some cases polyserositis, of tuberculous or other nature, has been known as a past event, or found on postmortem examination; usually such polyserositis involves only pleura and pericardium but in a few cases it also includes the peritoneum as may happen in tuberculosis or as we saw it in a few very sick but surviving cases who had influenza during the great epidemic of 1918-1919. About one-half of the patients who show pericardial adhesions at postmortem examinations show also pleural adhesions. Pyogenic infections and trauma are responsible for rare instances of chronic pericarditis.

Pathology. There are five degrees or pathological types of chronic pericarditis. The first consists of relatively small areas of fibrosis without adhesions—milk spots belong here. The second consists of single or scattered strands or patches of adhesion between the visceral and parietal pericardial layers or between the parietal pericardium and the pleura; these are of no clinical importance although at postmortem examination they prove a previous acute pericarditis, pleurocarditis, or myocardial infarct. The third degree of chronic pericarditis consists of complete, or almost complete, obliteration of the pericardial sac *without* thick or constricting fibrosis and *without* any important adhesions to diaphragm or chest wall. These first three types make up the great majority of cases of chronic pericarditis and are of no clinical significance. The last two types together probably comprise less than 5 per cent of the total, the fourth being more frequent than the fifth though in some cases both are combined. The fourth type consists of extensive adhesions which glue the heart and its obliterated pericardial sac to the diaphragm, to the mediastinum, to the anterior chest wall, or to all three. The increase in the work of the heart that results from this condition causes the heart to enlarge; dilatation is further favored by the fixation of the heart to various structures which prevent the proper action of the various chambers; it seems likely that the enormous left auricular enlargement that is found in some cases of mitral valve disease is in part the result of pericardial adhesions about the left auricle. In this fourth type failure of the overworked heart may result from the pericardial adhesions alone but it is usually favored also by

the simultaneous occurrence of valvular disease. Finally, the fifth type of chronic pericarditis is that which gives rise to Pick's disease. Mediastinopericarditis, with massive constricting adhesions, compresses the heart and great veins as in a vise, preventing the proper entrance of blood into the right auricle and through the venae cavae. This condition has been labelled *concretio cordis*. Embedded in these massive adhesions there are frequently sheets or strands of calcium which at times are so extensive that the heart is surrounded by a hard shell. Pick described this disease in 1896; he mentioned three cases, one tuberculous, one probably tuberculous, and one of unknown etiology. My associates and I have been particularly interested in this condition. It is rare, but we find on the average one or two new cases every year now. We have never seen Pick's disease in rheumatic patients. Our cases have been the result of tuberculosis, of polyserositis complicating pneumonia, or of unknown cause. The heart may be somewhat enlarged in Pick's disease, but it is sometimes normal in size or small; the presence of external adhesions probably explains the increased heart size in some cases. Pick's disease should not be confused with polyserositis (Concato's disease) although it may arise from it; when originally described it was called mediastinopericarditic pseudo-cirrhosis of the liver. There is chronic congestion of the liver and a variable degree of cirrhosis there. There may or may not be an associated perihepatitis.

Symptoms. There are no symptoms of chronic pericarditis except for the usual breathlessness of congestive failure if it appears as a complication of external adhesions. There is no pain.

Signs. There are no signs of chronic pericarditis except in the relatively rare cases of the fourth and fifth pathological types.

Where adhesions glue the heart to diaphragm and chest wall, Broadbent's sign occurs and is much more marked than when it is found with cardiac enlargement alone; this sign consists of forceful systolic retraction of the ribs and interspaces over the lower part of the left chest posteriorly and is due chiefly to systolic tugging on the diaphragm and thereby on its thoracic attachments. Other signs of external adhesions are absolute or relative fixation of the apex impulse and percussion borders of the heart on physical examination and on X-ray examination in different phases of respiration. An important sign is that described by Wenckebach, which consists of fluoroscopic evidence of paradoxical elevation of the heart shadow with the sternum on deep inspiration, the heart being held up by adhesions which glue it to the anterior chest wall. A systolic tug on the left dome of the diaphragm seen fluoroscopically is another important sign of pericardial adhesions. Extensive pleural thickening sometimes seen by X-ray favors the diagnosis of pericardial adhesions in doubtful cases. Electrocardiographic and other signs like the

pulsus paradoxus are of less importance than the signs just mentioned.

Evidence of Pick's disease (constrictive mediastinopericarditis) is stasis in the great veins, especially in the inferior vena cava, in the absence of congestive heart failure or of mediastinal tumors compressing the great veins and right auricle. Stasis shows itself by engorgement of the cervical veins (in most cases) and by chronic enlargement of the liver and preponderant ascites with relatively little edema in the legs. Corroborative evidence is secured by X-ray findings of cardiac fixation in the mediastinum, small cardiac pulsations, small heart size in many cases, and conclusively in an appreciable number of instances by calcification seen by fluoroscopy or on X-ray films. The pulse is usually small and the blood and pulse pressure are usually low. There may or may not be auricular fibrillation or systolic murmurs. The lungs are clear.

Course and prognosis. In the vast majority of cases of chronic pericarditis there is no disability or shortening of life and the condition is merely a postmortem surprise. With extensive external adhesions there may or may not be heart failure and a shortening of life. In Pick's disease there is always more or less crippling, but as a rule life lasts many years in spite of extensive ascites.

Treatment. The only treatment that need be considered is that for extensive external adhesions and for Pick's disease. Medical treatment of heart failure when it complicates chronic adhesive pericarditis, and limitation of activity in Pick's disease follow the usual procedures, but the primary therapy must be surgery to free the heart (cardiolysis): Brauer's operation introduced in 1902 for external adhesions, and Delorme's operation (1898) for Pick's disease. Brauer's operation called also thoracolysis, or thoracolysis praecardica, consists of the removal of several ribs and costal cartilages, usually the third, fourth, and fifth, or the fourth, fifth, and sixth, over the precordium to diminish the load on the heart. Delorme's operation, also called decortication of the heart, or pericardial resection, consists first of Brauer's operation, which exposes the heart and pericardium, and then of careful dissection of the thickened constricting pericardium from the surface of the heart and great vessels. The results of both these operations have been remarkably good in some cases, with practical cures in a few, especially in Pick's disease. Naturally Delorme's operation is much the more difficult one and should be entrusted only to experienced thoracic surgeons who have excellent judgment. The patient with Pick's disease most suitable is a relatively young person who has had signs of trouble for only a few months or a few years and in whom the infection giving rise to the mediastinopericarditis has ceased to be active.

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